CLASS I AIR PERMIT RENEWAL APPLICATION

UNS ELECTRIC, INC.
VALENCIA POWER PLANT
PERMIT NUMBER 63697

Submitted to:
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Prepared by:
UNS Electric, Inc.
P.O. Box 711, Mail Stop HQW705
Tucson, Arizona 85702

February 2021

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Executive Summary

UNS Electric Inc. (UNSE) currently operates its Valencia Power Plant (VPP) under Air Quality Class I Permit No. 63697. VPP is located at 1741 North Grand Avenue, Nogales, Santa Cruz County, Arizona 85621. The facility consists of three Hitachi MS 5001 M-series combustion gas turbines rated at 13.5 MW each and one General Electric LM2500 rated at 23 MW, designated as Gas Turbine Units P1, P2, P3 and P4, respectively. Water injection is utilized on all four turbines to control nitrogen oxide emissions. Each of the combustion turbines can be fired on natural gas, distillate oil, or a combination of the two fuels. Natural gas is supplied via a pipeline that runs through Nogales. Distillate oil is stored onsite in two 50,000-gallon storage tanks. VPP produces peaking power and/or backup power and provides voltage stabilization for UNSE's Santa Cruz service area.

Air Quality Permit No. 63697 was issued by the Arizona Department of Environmental Quality (ADEQ) on September 1, 2016, and is set to expire on September 1, 2021. UNSE is submitting this timely application pursuant to A.A.C. R18-2-304.D.2, for renewal of the current permit.

I. History of Air Quality Permit Number 63697

(Significant and Minor Permit Revisions and Administrative Amendment)

The Valencia Power Plant (VPP) is a major source under Title V of the Clean Air Act and as such, the facility is required to retain a Title V air quality permit for its operation. VPP currently holds a valid Operating Permit No. 63697, which is to expire on September 1, 2021. Pursuant to A.A.C. R18-2-304.D.2, this permit is up for renewal 6 months prior to the date of permit expiration. UNS Electric, Inc. (UNSE) is hereby submitting this timely renewal application.

Title V History for VPP (September 1, 2016 – Present)

Renewal Operating Permit Number 63697 is issued to UNSE for operation of the Valencia Power Plant facility in Nogales, Arizona. The permit was issued on September 1, 2016 and is to expire on September 1, 2021. This permit included the renewal of Title V Permit No. 52663. This renewal incorporated the removal of NOx and CO CEMS from Units P1, P2, and P3. The NOx CEMS were replaced with a water to fuel monitoring system meeting the provisions of §60.334 of Subpart GG. The CO CEMS were replaced with a conservative CO concentration estimate, used to ensure the facility meets compliance with its plant-wide 240 tpy CO emission cap.

Title V History for VPP (October 7, 1987 – September 1, 2016)

1. Renewal Operating Permit Number 52663 is issued to UNSE for operation of the Valencia Power Plant facility in Nogales Arizona. The permit was issued on October 13, 2011 and is to expire on October 13, 2016. This permit included the renewal of Title V Permit No. 32961. This renewal incorporates a significant permit revision (No. 50989) for the construction and operation of an emergency diesel generator to produce backup power for startup processes for Unit P1, P2, P3, and P4.

2. Significant Permit Revision issued on April 29, 2010 to UNSE. This significant permit revision # 50989 authorizes the company to add an emergency diesel generator to produce power for startup processes for Unit P1, P2, P3, and P4.

3. Renewal Operating Permit Number 32961 issued to UNSE for operation of the Valencia Power Plant facility in Nogales Arizona. Renewal Operating Permit issued on January 9, 2006 and expires on January 9, 2011. This permit included the renewal of Title V Permit No. 1000402, previously issued to Citizens Utilities Company. This renewal incorporates a significant revision to Title V Permit No. 1000402 for the construction and operation of a new simple cycle combustion turbine generator rated at less than 25 MW.

4. Administrative Amendment Number 30179 requesting permittee name be changed from Unisource Energy Services, Inc. to "UNS Electric, Inc." issued to UNS Electric, Inc. on October 15, 2003.

5. Permit Transfer Number 30173 from CUC to Unisource Energy Services, Inc. issued on August 11, 2003 subject to conditions contained in Permit Number 1000402, Minor Permit Revision Number 1001233, and Significant Permit Revision Number 1001556.

6. Significant Permit Revision Number 1001556 to remove existing annual generating limits for the three turbines and install Continuous Emission Monitoring System (CEMS) for CO and NO_x issued to CUC on June 18, 2002.

7. Minor Permit Revision Number 1001233 to remove four Alco Diesel generating units and their associated permit conditions issued to CUC on May 2, 2000.

8. Title V Air Quality Permit Number 1000402 issued to CUC on November 19, 1999.

9. Significant Permit Revision Number 1000563 to allow operation of turbines in power augmentation mode issued to CUC on July 1, 1999 (reference Technical Review and Evaluation of Application for Air Quality Permit No. 1000402, Section VI).

10. Minor Permit Revision Number 1000589 to allow installation of water injection on gas turbines and installation of 50,000-gal diesel fuel storage tank issued to CUC on January 24, 1997 (reference Technical Review and Evaluation of Application for Air Quality Permit No. 1000402, Section VI).

11. Operating Permit Number 191209-96 covering three gas turbines and four Alco Diesel IC engine generators issued to CUC on May 5, 1993 (reference Technical Review and Evaluation of Application for Air Quality Permit No. 1000402, Section VI).

12. Operating Permit Number 4402-94 for four Alco Diesel generating units and three gas turbines issued to CUC on July 17, 1991 (reference Technical Review and Evaluation of Application for Air Quality Permit No. 1000402, Section VI).

13. Installation Permit Number 45001 for three gas turbines issued to Citizens Utilities Company (CUC) on October 7, 1987 (reference Technical Review and Evaluation of Application for Air Quality Permit No. 1000402, Section VI).

II. Standard Permit Application Form and Certification

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338
STANDARD PERMIT APPLICATION FORM
(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to: (Business license name of organization that is to receive permit)
UNS Electric, Inc.

2. Mailing Address: P.O. Box 711, Mail Stop HQW705
City: Tucson State: Arizona ZIP: 85702

3. Previous Company Name: (if applicable) Not Applicable

4. Name (or names) of Owners/Principals: UNS Energy Corporation
Phone: Fax: Email:

5. Name of Owner's Agent: Zig Fang
Phone: (520) 918-8380 Fax: (520) 918-8250 Email: zfang@tep.com

6. Plant/Site Manager/Contact Person and Title: Dylan Bearce, Director, Tucson Power Production
Phone: (520) 745-3338
Fax: (520) 754-3348
Email: DBearce@tep.com

7. Plant Site Name: Valencia Power Plant (VPP)
Plant Site Location/Address: 1741 North Grand Avenue
City: Nogales County: Santa Cruz ZIP: 85621
Indian Reservation (if applicable, which one): Not Applicable
Latitude/Longitude, Elevation: Lat. - 31° 21' 51" N, Long. - 110° 55' 50 W", Elev. – 3,750' above MSL

8. Equipment Purpose: Electrical Power Generation
Equipment List/Description: Four simple cycle combustion turbine units and associate equipment

9. Type of Organization: ☒ Corporation ☐ Individual Owner ☐ Partnership
☐ Government Entity (Government Facility Code: ____) ☐ Other

10. Permit Application Basis: ☐ New Source ☐ Significant Revision ☐ Minor Revision
(Check all that apply.) ☒ Renewal of Existing Permit ☐ Portable Source ☐ General Permit
For renewal or modification, include existing permit number (and exp. date): Permit No. 63697 (Exp. September 1, 2021)
Date of Commencement of Construction or Modification: Not applicable
Is any of the equipment to be leased to another individual or entity? ☐ Yes ☒ No
Standard Industrial Classification Code: 4911 State Permit Class: I

11. Signature of Responsible Official of Organization:
Official Title of Signer: Director, Tucson Power Production

12. Typed or Printed Name of Signer: Dylan Bearce
Date: 02/25/2021 Telephone Number: (520) 745-3338
Company Name: UNS Electric, Inc.

Last Revised: February 2021

Certification of Compliance with all Applicable Requirements:

This certification must be signed by a Responsible Official. Applications without a signed certification will be deemed incomplete.

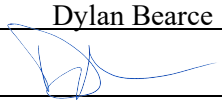
The responsible official is defined as a person who is in charge of principal business functions or who performs policy or decision making functions for the business. This may also include an authorized representative for such persons. For a complete definition see the Arizona Administrative Code, Title 18, Chapter 2, Section R18-2-301.

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Arizona Department of Environmental Quality as public record. I also attest that I am in compliance with the applicable requirements of the General Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the General Permit. I will present a certification of compliance to ADEQ no less than semiannually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.

Typed or Printed Company Name: UNS Electric, Inc.

Official Title of Signer: Director, Tucson Power Production

Typed or Printer Name of Signer: Dylan Bearce

Signature of Responsible Official:  Date: 02/25/2021

Certification of Truth, Accuracy, and Completeness
Arizona Administrative Code R18-2-304.H.

R18-2-304.H. Certification of Truth, Accuracy, and Completeness. Any application form, report, or compliance certification submitted pursuant to this Chapter shall contain certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this Article shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

By my signature, I, Conrad Spencer, hereby certify that based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Official Title of Signer: Director, Tucson Power Production

Typed or Printer Name of Signer: Dylan Bearce

Signature of Responsible Official:  Date: 02/25/2021

Standard Permit Application - Additional Information for VPP Permit Renewal

1. *Description of the process to be carried out in each unit (including Source Classification Code)*

   Units P1, P2, P3 and P4 simple cycle gas combustion turbines for electrical generation
   Unit P8 (Diesel Fuel Storage Tank): storage of diesel fuel
   EGEN1 Emergency Diesel Generator Engine: for emergency start power
   BSP1, BSP2 and BSP3: black starter engines for Units P1-P3
   SIC: 4911 for entire facility

2. *Description of product(s):*

   The equipment is operated to provide electrical power for the UNS Electric, Inc. operations and for the Santa Cruz Electric Division service area.

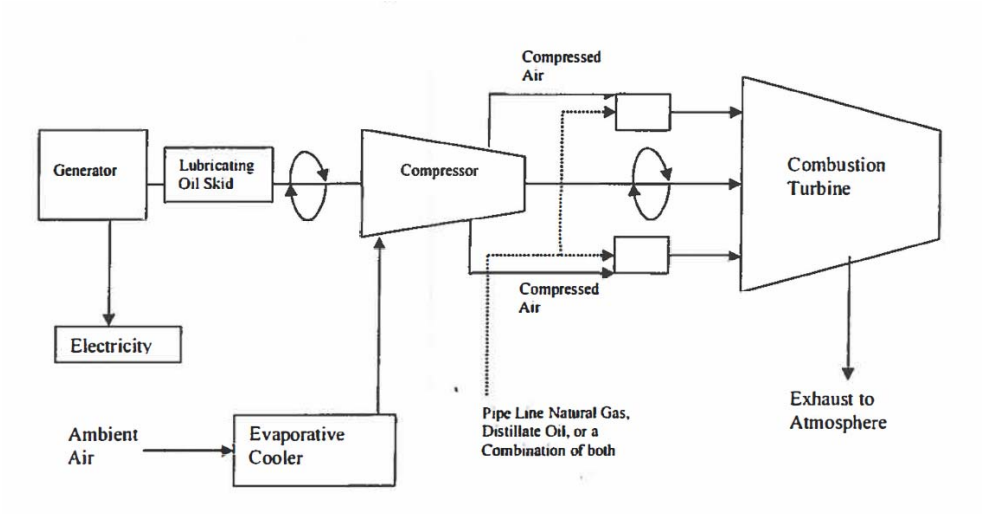
3. *Description of alternate operating scenario, if desired by applicant (include Source Classification Code).*

   Gas Turbines: Each gas turbine may operate on 100% natural gas, 100% diesel fuel, or any combination of the two fuels.

4. *Description of alternate operating scenario product(s), if applicable.*

   Not Applicable.

5. *A flow diagram for all processes.*



6. *A material balance for all processes (optional, only if emission calculations are based on material balance).*

   Not Applicable.

7. *Emissions Related Information:*

This information is included with this submittal. See attached Emissions Calculations and Summary (Section III).

8. *Citation and description of all applicable requirements as defined in R18-2-101.*

See "Identification of Applicable Requirements" (Section IV).

9. *An explanation of any proposed exemptions from otherwise applicable requirements.*

See "Insignificant Activities" (Section V)

10. *The following information to the extent it is needed to determine or regulate emissions:*

a. *Maximum annual process rate for each piece of equipment that generates air emissions.*

Units P1, P2, P3, and P4: Reference calculations in Section III.
Unit P8, EGEN1 and BSP1-BSP3: Reference calculations in Section III.

b. *Maximum annual process rate for the whole plant.*

Reference calculations in Section III.

c. *Maximum rated hourly process rate for each piece of equipment which generates air emissions.*

Units P1, P2, and P3: 14 MW each continuous maximum rating
Unit P4: 21 MW continuous maximum rating
Units P8 and P9: Reference calculations in Section III.
EGEN1: 738 hp

d. *Maximum rated hourly process rate for the whole plant.*

63 MW continuous maximum rating for the four turbines

e. *For all fuel burning equipment including generators, a description of fuel uses, including the type used, the quantity used per year, the maximum and average quantity used per hour, the percent used for process heat, and higher heating value of the fuel. For solid fuels and fuel oils, state the potential sulfur and ash content.*

Fuel Data for Gas Turbines

The gas turbines (Units P1, P2, P3 and P4) may be fueled on both natural gas and fuel oil number 2. Fuel specifications are as follows:

PARAMETER	**VALUE**	
Natural Gas		
Average Annual Fuel Consumption	22,302	Mscf/yr
Maximum Hourly Consumption	218.38	Mscf/hr
Average Hourly Consumption	120.16	Mscf/hr
Percent Used for Process Heat	0	%
Higher Heating Value of the Fuel	1020	Btu/scf [AP-42]

Fuel Oil No. 2		
Average Annual Fuel Consumption	772,175	gal/yr
Maximum Hourly Consumption	1,603	gal/hr
Average Hourly Consumption	851.53	gal hour
Percent Used for Process Heat	0	%
Higher Heating Value of the Fuel	139,000	Btu/gal [AP-42]
Maximum Sulfur Content	0.2	% by weight

*****_Average consumption based on historical averages – no fuel oil has been fired in P1-P4 for over 5 years_

Fuel Data for Emergency Diesel Generator

The emergency generator (Unit EGEN1) fuel oil number 2. Fuel specifications are as follows:

PARAMETER	**VALUE**	
Fuel Oil No. 2		
Average Annual Fuel Consumption – based on 500 hours of emergency operation	20,000	gal/yr
Maximum Hourly Consumption	40	gal/hr
Average Hourly Consumption	~40	gal/hour
Percent Used for Process Heat	0	%
Higher Heating Value of the Fuel	139,000	Btu/gal [AP-42]
Maximum Sulfur Content	15	ppm by weight

f. *A description of all raw materials used and the maximum annual and hourly, monthly, or quarterly quantities of each material used.*

Not Applicable.

g. *Anticipated Operating Schedules.*

1) *Percent of annual production by season.*

Varies annually.

2) *Days of the week normally in operation.*

7 days per week.

3) *Shifts or hours of the day normally in operation.*

24 hours per day.

4) *Number of days per year in operation.*

Varies annually.

h. *Limitations on source operations and any work practice standards affecting emissions.*

Fuel Oil sulfur content not to exceed (1) 0.2% by weight for four turbines, (2) 0.9% by weight for three starter engines, and (3) 15ppm by weight for diesel emergency generator.

11. A description of all process and control equipment for which permits are required including:

Name, Make (if available), Model (if available), Serial number (if available), Date of manufacture (if available), Size/production capacity and Type.

This information is located in the following document: UNS Electric, Inc. draft permit "Attachment "C": Equipment List." (See Section VII).

12. Stack Information:

Identification, Description, Building Dimensions, Exit Gas Temperature, Exit Gas Velocity, Height, and Inside Dimensions.

Stack Identification	**P1**	**P2**	**P3**	**P4**	**EGEN1**	**P8**
Description	Turbine Stack	Turbine Stack	Turbine Stack	Turbine Stack	Stack	Diesel Storage Tank Vent
Building Dimensions	NA	NA	NA	NA	NA	NA
Exit Gas Temperature	960°F	960°F	960°F	975°F	969.1°F	NA
Exit Gas Velocity	72.8 ft/s	72.8 ft/s	72.8 ft/s	85 ft/s	217.34 ft/s	NA
Height (from bottom of equipment)	29.8'	29.8'	29.8'	45.0'	11.54'	18'
Inside Dimensions	11.5' x 9.4' (rect.)	11.5' x 9.4' (rect.)	11.5' x 9.4' (rect.)	9.0' (circular)	8.0" (circular)	4" (round)

13. Site diagram which includes: Property boundaries, Adjacent streets or roads, Directional arrow, Elevation, Closest distance between equipment and property boundary, Equipment layout, Relative location of emission sources/points, Location of emission points and non-point emission areas, and Location of air pollution control equipment.

See attached Site Plan, Drawing (Section VII).

14. Air Pollution Control Information:

a. Description of or reference to any applicable test method for determining compliance with each applicable requirement.

This information is located in the following document: UNS Electric, Inc. draft permit "Attachment "B": Specific Conditions" (Section VII).

b. Identification, description, and location of air pollution control equipment, including spray nozzles and hoods, and compliance monitoring devices or activities.

This information is located in the following document: UNS Electric, Inc. draft permit "Attachment "C": Equipment List." (See Section VII).

c. *The rated and operating efficiency of air pollution control equipment.*

Depending on initial NO_x levels, water injection system may reduce NO_x by 60% or higher (AP-42).

d. *Data necessary to establish required efficiency for air pollution control equipment (e.g. air to cloth ratio for baghouses, pressure drop for scrubbers, and warranty information).*

This information is located in the original construction permit application submittal.

e. *Evidence that operation of the new or modified pollution control equipment will not violate any ambient air quality standards, or PSD increments.*

This information is located in the original construction permit application submittal.

15. *Equipment manufacturer's bulletins and shop drawings may be acceptable where appropriate.*

This information is located in the original construction permit application submittal.

16. *Compliance:*

a. *A description of the compliance status of the source with respect to all applicable requirements including, but not limited to:*

i.-iv. *A demonstration that the source or alteration will comply with the applicable requirements contained in Articles 6, 7, 8 and 9.*

The present Title V permit requires submittal of semiannual compliance certification documents, demonstrating compliance with the standards. These compliance certifications have been submitted to ADEQ and are in their file.

v. *A demonstration that the source or alteration will comply with the applicable requirements contained in Article 11 and in rules promulgated pursuant to A.R.S. § 49-426.03.*

The present Title V permit requires submittal of semiannual compliance certification documents, demonstrating compliance with the standards. These compliance certifications have been submitted to ADEQ and are in their file.

vi. *A demonstration that the source or alteration will comply with the applicable requirements contained in rules promulgated pursuant to A.R.S. § 49-426.06.*

The present Title V permit requires submittal of semiannual compliance certification documents, demonstrating compliance with the standards. These compliance certifications have been submitted to ADEQ and are in their file.

b. *A compliance schedule as follows:*

1) *For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements.*

See Section III for a "Certification of Compliance with all Applicable Requirements.

2) *For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis. A statement that the source will meet in a timely manner applicable requirements that become effective during the permit term shall satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirement.*

See Section III for a "Certification of Compliance with all Applicable Requirements.

3) *A schedule of compliance for sources that are not in compliance with all applicable requirements at the time of permit issuance. Such a schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the source will be in noncompliance at the time of permit issuance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based.*

Not applicable.

c. *A schedule for submission of certified progress reports no less frequently than every 6 months for sources required to have a schedule of compliance to remedy a violation.*

Not applicable.

d. *The compliance plan content requirements specified in this paragraph shall apply and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under Title IV of the Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emissions limitations.*

VPP does not fall under the Title IV Acid Rain Program; therefore, a compliance plan is not applicable.

17. *Compliance Certification*

a. *A certification of compliance with all applicable requirements by a responsible official. The certification should include:*

1) *Identification of the applicable requirements which are the basis of the certification;*

The present Title V permit requires submittal of semiannual compliance certification documents demonstrating compliance with all applicable requirements. These compliance certifications have been submitted to ADEQ and are in their file.

2) *A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods;*

The present Title V permit requires submittal of semiannual compliance certification documents demonstrating compliance with all applicable requirements. These compliance certifications include the methods used for determining compliance, including a description of monitoring, record keeping, and reporting requirements and test methods. These compliance certifications have been submitted to ADEQ and are in their file.

3) *A schedule for submission of compliance certifications during the permit term to be submitted no less frequently than annually, or more frequent if specified by the underlying applicable requirement or by the permitting authority; and*

The present Title V permit includes a schedule for submission of semiannual compliance certification documents. The schedule is being followed and these compliance certifications have been submitted to ADEQ and are in their file.

4) *A statement indicating the source's compliance status with any applicable enhanced monitoring and compliance certification requirements.*

See Section III for a "Certification of Compliance with all Applicable Requirements."

5) *A certification of truth, accuracy and completeness pursuant to R18-2-304 (H).*

See Section III for a "Certification of Truth, Accuracy and Completeness".

b. *Acid Rain Program Compliance Plan (Sources subject to the Federal acid rain regulations shall use nationally standardized forms for acid rain portions of permit applications and compliance plans, as required by regulations promulgated under Title IV of the Act):*

VPP does not fall under the Title IV Acid Rain Program; therefore, use of acid rain nationally standardized forms is not applicable.

18. *A new major source as defined in R18-2-401 or a major modification shall submit all information required in this appendix and information necessary to show compliance with Article 4 including, but not limited to: a. 1.-4., and b. 1. -4*

This information is not applicable for a renewal of an existing permit.

19. *Calculations on which all information requested in this appendix is based.*

Calculations relating to the following emission sources are included with this application as indicated below.

Hitachi Gas Turbines PTE (Units P1, P2, P3)
Reference Section III.

GE Gas Turbine PTE (Unit P4)
Reference Section III.

Caterpillar Emergency Generator PTE (Unit EGEN1)
Reference Section III.

Detroit Diesel Starter Engines (BSP1, BSP2, BSP3)
Reference Section III.

Diesel Fuel Storage Tank PTE (Unit P8)
Calculation methodology from AP-42 Section 7.1 Organic Liquid Storage Tanks and through EPA's Tanks 4.0 model (reference Section III)

III. Emission Calculations and Summary

Air emission sources at the Valencia Power Plant comprise primarily four stationary gas turbines (Units P1-P4). Other smaller sources include one emergency diesel generator (EGEN1) for Unit P4, three diesel starter engines associated with Units P1-P3, and two diesel storage tanks P8 and P9. The plant wide total emissions are summarized in Table III-1. Emission calculations for criteria and hazardous air pollutants (HAPs) and greenhouse gas are presented in Tables III-2 through III-8.

Table III-1. Valencia Power Plant Facility Wide Potential to Emit (PTE) Summary

Air Pollutant	CO [1]	$PM_{10}/PM_{2.5}$ [1]	Lead [1]	VOCs [1]	SO2 [1]	NOx [1]	Total HAPs [2]	CO2e
Plant-Wide Potential To Emit (tons/year) [3]	240	48.76	0.11	2.14	200.27	240	5.08	638,108

1. For Title V air permitting purposes, the major source threshold for a criteria air pollutant is 100 tpy.
2. Total HAPs include organic and trace metal. For Title V air permit purposes, major HAPs source threshold is 10 tpy of a single HAP or 25 tpy of any HAPs combination.
3. The plant-wide potential to emit calculation assumes all gas turbines operated continuously for 8,760 hours per year and aggregated to include all combustion units.

Table III-2: Criteria Pollutants and GHG PTE for Valencia Combustion Turbines

Turbines Operating Parameters	Units P1-P3 [2]	Unit P4 [2]
Heat Rate at Operating Conditions (Btu/kW-hr)[1]	16,500	11,000
Maximum Continuous Power Output Per Unit (MW)	14.00	21.00
Maximum Oil Throughput Per Unit (gal/hr)	1,661.87	1,661.87
Maximum Turbine Firing Rate Per Unit (MMBtu/hr)	231.00	231.00
Oil Heating Value (Btu/gal) [3]	139,000	139,000
Total Heat Input Per Unit (MMBtu/yr)	2,023,560	2,023,560
Max Oil Throughput Per Unit (gpy)	14,557,986	14,557,986
Maximum sulfur content (% by weight)	0.2	0.2
CO Emission Factor (lb/MMBtu) AP-42 Table 3.1-1[3]	0.076	0.076
CO2e Emission Factor (lb/MMBtu) AP-42 Table 3.1-2a [4]	157.56	157.55
PM10/PM2.5 Emission Factor (lb/MMBtu) AP-42 Table 3.1-2a[3,6]	0.012	0.012
Lead Emission Factor (lb/MMBtu) AP-42 Table 3.1-2a[3]	0.000014	0.000014
VOC Emission Factor (lb/MMBtu) AP-42 Table 3.1-2a[3]	0.00041	0.00041
SO2 Emission Factor (lb/MMBtu) AP-42 Table 3.1-2a[3]	0.202	0.202
NOx Emission Factor (lb/MMBtu) F-Factor Method [5]	0.29	0.29
Maximum Operating Hours Per Unit (hrs/yr)	8,760	8,760

	Units P1-P3 [2]		Unit P4 [2]		Total CT PTE [7]	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
PTE - CO Emissions	17.56	76.90	17.56	76.90	70.22	238
PTE - CO2e Emissions	36,396	159,416	36,394	159,405	145,583	637,652
PTE - PM10/PM2.5 Emissions	2.77	12.14	2.77	12.14	11.09	48.57
PTE - Lead Emissions	0.00	0.01	0.00	0.01	0.01	0.06
PTE - VOC Emissions	0.09	0.41	0.09	0.41	0.38	1.66
PTE - SO2 Emissions	46.66	204.38	46.66	204.38	186.65	200
PTE - NOx Emissions	67.27	294.66	67.27	294.66	269.10	235

Footnotes:

1. Section III of Technical Review and Evaluation of Application for Air Quality Permit No. 1000402 published by ADEQ in 1999.

2. Calculations based on turbines being exclusively oil-fired.

3. AP-42 - version 4/00. Emissions = (Maximum Turbine Firing Rate) x (Emission Factor)

4. CH4 and N2O emission factors from 40 CFR 98 Table C-2. The global warning potentials used for CO2 equivalent calculation are 21 for CH4 and 310 for N2O.

5. $E(NOx) = C_d*F_d*20.9/(20.9-15)$ where C_d=75 ppm, the allowable NOx standard from 40 CFR 60 Subpart GG, and Fd=9190 dscf/MMBtu, dry F-factor for fuel oil.

6. The particle size distribution was not specified in AP-42 Table 3.1-2a. All particulate is conservatively assumed to be less than 2.5 μm in size.

7. Total annual PTE calculated for CO, SO2 and NOx PTE from all turbine units are 287, 763 and 1,099 tons per year, respectively. However, the emissions are capped at permit limits of 240 tpy for CO, 200 tpy for SO2 and 240 tpy for NOx.

Table III-3: Organic HAPs PTE for Valencia Combustion Turbines

Compounds [1] (AP-42 Table 3.1-4 for Organic HAPs)	Uncontrolled Emission [2] Factor (AP-42) lb/MMBtu	PTE Per Unit for Units P1-P3 [1] lb/hr	PTE Per Unit for Units P1-P3 [1] tpy	Unit P4 PTE [1] lb/hr	Unit P4 PTE [1] tpy	Units P1-P4 PTE Total lb/hr	Units P1-P4 PTE Total tpy
Polynuclear Aromatic Hydrocarbons (PAH)	4.00E-05	9.24E-03	4.05E-02	9.24E-03	4.05E-02	3.70E-02	1.62E-01
1,3-Butadiene	1.60E-05	3.70E-03	1.62E-02	3.70E-03	1.62E-02	1.48E-02	6.48E-02
Benzene	5.50E-05	1.27E-02	5.56E-02	1.27E-02	5.56E-02	5.08E-02	2.23E-01
Formaldehyde	2.80E-04	6.47E-02	2.83E-01	6.47E-02	2.83E-01	2.59E-01	1.13E+00
Napthalene	3.50E-05	8.09E-03	3.54E-02	8.09E-03	3.54E-02	3.23E-02	1.42E-01
Total Organic HAPs		**0.09**	**0.40**	**0.09**	**0.40**	**0.36**	**1.58**

1. Emissions = (Max Turbine Firing Rate) x (Emission Factor). See calculations for Criteria Pollutants for max turbine firing rate.
2. AP-42 - version 4/00.

Table III-4: Trace Metal HAPs PTE for Valencia Combustion Turbines

Compounds [1] (AP-42 Table 3.1-5 for Trace Metals)	AP-42 Emission Factor [2] lb/MMBtu	PTE Per Unit for Units P1-P3 [1] lb/hr	PTE Per Unit for Units P1-P3 [1] tpy	Unit P4 PTE [1] lb/hr	Unit P4 PTE [1] tpy	Units P1-P4 PTE Total lb/hr	Units P1-P4 PTE Total tpy
Arsenic	1.10E-05	2.54E-03	1.11E-02	2.54E-03	1.11E-02	1.02E-02	4.45E-02
Beryllium	3.10E-07	7.16E-05	3.14E-04	7.16E-05	3.14E-04	2.86E-04	1.25E-03
Cadmium	4.80E-06	1.11E-03	4.86E-03	1.11E-03	4.86E-03	4.44E-03	1.94E-02
Chromium	1.10E-05	2.54E-03	1.11E-02	2.54E-03	1.11E-02	1.02E-02	4.45E-02
Lead	1.40E-05	3.23E-03	1.42E-02	3.23E-03	1.42E-02	1.29E-02	5.67E-02
Manganese	7.90E-04	1.82E-01	7.99E-01	1.82E-01	7.99E-01	7.30E-01	3.20E+00
Mercury	1.20E-06	2.77E-04	1.21E-03	2.77E-04	1.21E-03	1.11E-03	4.86E-03
Nickel	4.60E-06	1.06E-03	4.65E-03	1.06E-03	4.65E-03	4.25E-03	1.86E-02
Selenium	2.50E-05	5.78E-03	2.53E-02	5.78E-03	2.53E-02	2.31E-02	1.01E-01
Total Trace Metal HAPs		**0.20**	**0.87**	**0.20**	**0.87**	**0.80**	**3.49**

[a] Emissions = (Max Turbine Firing Rate) x (Emission Factor). See calculations for Criteria Pollutants for max turbine firing rate.
[b] AP-42 - version 4/00.

Table III-5: Criteria Pollutants and GHG PTE from Emergency Diesel Generating Engine (EGEN1)

Valencia Power Plant (VPP)					
Emergency Diesel Generator Engine (EGEN1) Data					
Generator Rating: [1]	738	HP/unit			
Power Output: [1]	550	kW/unit			
Fuel consumption at 100% load [1]	39.92	gallons/hour			
Fuel heating value [2]	139,000	Btu/gallon			
Heat Input	5.54888	MMBtu/hour			
Operating Hours: [3]	900	hours/year			
Diesel Sulfur: [6]	0.0015	% by wt.			
				Potential Emissions	
Pollutant	Emission Factor	Emission Factor Unit	Emission Factor Source	(lb/hr)	(tpy)
NOx	6.4	g/KW-hr	40 CFR 89.112 (Tier 2)	7.76	3.49
CO	3.5	g/KW-hr	40 CFR 89.112 (Tier 2)	4.24	1.91
CO2e [4]	165.56	lb/MMBtu	AP-42, Table 3.4-1 [2]	918.67	413.40
VOC	0.000705	lb/hp-hr	AP-42, Table 3.4-1 [2]	0.52	0.23
PM10/PM2.5 [5]	0.2	g/KW-hr	40 CFR 89.112 (Tier 2)	0.24	0.11
SO2 [6]	0.000012135	lb/hp-hr	AP-42, Table 3.4-1 [2]	0.01	0.00

1. Based on Vendor (Caterpillar) supplied information
2. AP-42 - version 10/96
3. EGEN1 is expected to operate less than 100 hrs/yr for testing. 900 hours per year is a conservative estimate.
4. CO2 equivalent includes CH4 and N2O. CH4 and N2O emission factor from 40 CFR 98, Table C-2.
5. Tier 2 standard does not specify particle size distribution. All PM is conservatively assumed to be 2.5 µm particle size range.
6. Permit requires the sulfur content not greater than 15 ppm for any diesel fuel to be used by EGEN1 after 10/1/2010. SO2(lb/hp-hr)=8.09E-03*%S

Table III-6: HAPs PTE for Emergency Diesel Generator (EGEN1)

HAZARDOUS AIR POLLUTANTS - Emergency Diesel Generator (EGEN1)			
Maximum Firing Rate the Emergency Diesel Generator (MMBtu/hr) =		5.54888	
Emissions = (Max Turbine Firing Rate) x (Emission Factor) [2]			
		Unit fired on fuel oil # 2	
Listed HAP Pollutants	Uncontrolled Emission Factor (AP-42) (lb/MMBtu fuel input) [2]	PTE	PTE - based on 900 hrs of operation per year
		lb/hr	tons/year
Polynuclear Aromatic Hydrocarbons (PAH) including Nathalene AP-42 (AP-42 Table 3.4-4)	2.12E-04	1.2E-03	5.3E-04
Benzene (AP-42 Table 3.4-2)	7.76E-04	4.3E-03	1.9E-03
Toluene (AP-42 Table 3.4-2)	2.81E-04	1.6E-03	7.0E-04
Xylenes (AP-42 Table 3.4-2)	1.93E-04	1.1E-03	4.8E-04
Propylene (AP-42 Table 3.4-2)	2.79E-03	1.5E-02	7.0E-03
Formaldehyde (AP-42 Table 3.4-2)	7.89E-05	4.4E-04	2.0E-04
Acetaldehyde (AP-42 Table 3.4-2)	2.52E-05	1.4E-04	6.3E-05
Acrolein (AP-42 Table 3.4-2)	7.88E-06	4.4E-05	2.0E-05
Total HAPs (tons/yr) =		0.0242	0.011

Fuel consumption at 100% load [1]	39.92	gallons/hour
Fuel heating value [2]	139,000	Btu/gallon
Heat Input	5.54888	MMBtu/hour
Hours of operation	900	hours/year

NOTES:

[1] Based on Vendor supplied information

[2] AP-42 - version 10/96

Table III-7: Criteria Pollutant and GHG PTE for P1-P3 Diesel Starter Engines

P1-P3 Starter Engines Criteria Pollutants & GHG						
P1-P3 Starter Engines Data Assumed: [1]						
Engine Rating:	480	[7] HP/unit				
Number of engines:	3	units				
Fuel consumption at 100% load	25.1	gallons/hour/unit				
Fuel heating value	139,000	Btu/gallon				
Heat Input	3.4889	MMBtu/hour/unit				
Operating Hours: [3]	52	hrs/yr/unit				
Diesel Sulfur: [6]	0.89	% by wt.				
				Potential Emissions		
Pollutant	Emission Factor [2]	Emission Factor Unit	Emission Factor Source	lb/hr per unit	tons/yr per unit	tons/yr, all units total
NOx	3.10E-02	lb/hp-hr	AP-42, Table 3.3-1	14.88	0.39	1.16
CO	6.68E-03	lb/hp-hr	AP-42, Table 3.3-1	3.21	0.08	0.25
CO2e [4]	1.15E+00	lb/hp-hr	AP-42, Table 3.3-1	552.67	14.37	43.11
VOC	2.51E-03	lb/hp-hr	AP-42, Table 3.3-1	1.21	0.03	0.09
PM10/PM2.5 [5]	2.20E-03	lb/hp-hr	AP-42, Table 3.3-1	1.06	0.03	0.08
SO2 [6]	7.20E-03	lb/hp-hr	AP-42, Table 3.3-1	3.46	0.09	0.27

1. Due to lack of vendor's data, conservative assumptions are made for the PTE calculation.

2. AP-42 - version 10/96

3. Starter engines' runtime is very short. 52 hrs/yr is a conservative assumption.

4. CO2 equivalent includes CH4 and N2O. CH4 and N2O emission factor from 40 CFR 98, Table C-2.

5. AP-42, Table 3.3-1 assumes that all particulate is less than 1 µm in size.

6. Arizona rule requires the low sulfur fuel oil, which contains less than 0.9% sulfur by weight, to be used by the starter engines. SO2(lb/hp-hr)=8.09E-03*%S

7. Gross power output of the starter engines is rated between 415 bhp minimum and 480 bhp maximum. The maximum rating is used for a conservative emissions estimation.

Table III-7: HAPs PTE for P1-P3 Diesel Starter Engines

HAZARDOUS AIR POLLUTANTS - P1-P3 Starter Engines	
Maximum Firing Rate (MMBtu/hr/unit) =	3.4889
Emissions = (Max Turbine Firing Rate) x (Emission Factor)	

Listed HAP Pollutants	Emission Factor (lb/MMBtu fuel input)	Potential HAP Emissions		
		lb/hr per unit	tons/yr per unit	tons/yr, all units total
Polynuclear Aromatic Hydrocarbons (PAH) including Nathalene AP-42 (AP-42 Table 3.3-2)	1.68E-04	5.9E-04	1.5E-05	4.6E-05
Benzene (AP-42 Table 3.3-2)	9.33E-04	3.3E-03	8.5E-05	2.5E-04
Toluene (AP-42 Table 3.3-2)	4.09E-04	1.4E-03	3.7E-05	1.1E-04
Xylenes (AP-42 Table 3.3-2)	2.85E-04	9.9E-04	2.6E-05	7.8E-05
Propylene (AP-42 Table 3.3-2)	2.58E-03	9.0E-03	2.3E-04	7.0E-04
Formaldehyde (AP-42 Table 3.3-2)	1.18E-03	4.1E-03	1.1E-04	3.2E-04
Acetaldehyde (AP-42 Table 3.3-2)	7.67E-04	2.7E-03	7.0E-05	2.1E-04
Acrolein (AP-42 Table 3.3-2)	9.25E-05	3.2E-04	8.4E-06	2.5E-05
Total HAPs (tons/yr)		0.0224	0.0006	0.0017

Fuel consumption at 100% load	25.1	gallons/hour/unit
Fuel heating value	139,000	Btu/gallon
Heat Input	3.4889	MMBtu/hour/unit
Annual hours of operation	52	hours/yr/unit

NOTES: AP-42 - version 10/96

Table III-8: VOC and HAPs PTE for Diesel Fuel Storage Tanks P8 and P9

Potential to Emit for 50,000-gal Diesel Fuel Storage Tanks P8 and P9			
		Units P1-P3 Per Unit Operating[2]	Unit P4 Operating[2]
Max Oil Throughput Per Unit (gpy)		14,557,986	14,557,986
Maximum Oil Throughput Per Unit (gal/hr)		1,662	1,662
Maximum Turbine Firing Rate Per Unit (MMBtu/hr)[1]		231.00	231.00
Oil Heating Value (Btu/gal)		139,000	139,000
Total Heat Input (MMBtu/yr)		2,023,560	2,023,560

PTE Emissions for 50,000-gal Diesel Fuel Tanks P8 and P9			4 Turbines Maximum
VOC Emissions from EPA Tanks 4.0, AP-42 Section 7.1 Organic Liquid Storage Tanks[3]			
Max Oil Throughput for 4 Turbines (gpy)			58,231,942
PTE - VOC Emissions (lb/yr)			310.99
PTE - VOC Emissions (lb/hr)			0.04
PTE - VOC Emissions (tpy)			0.16
HAP Emissions estimated as VOCs from EPA TANKS 4.0 multiplied by fuel oil HAP content[4]			
PTE - HAP Emissions (lb/yr)			2.18004
PTE - HAP Emissions (lb/hr)			0.00025
PTE - HAP Emissions (tpy)			0.00109

Footnotes:
[1]Throughput in MMBtu/hour based on vendor data
[2]Calculations based on turbines being exclusively oil-fired.
[3]AP-42 - version 09/97
[4]Fuel Oil HAP content = 0.701 wt% based on vendor supplied information

IV. Identification of Applicable & Non-Applicable Requirements

REQUIREMENTS SPECIFICALLY IDENTIFIED AS APPLICABLE

Compliance with the terms contained in this permit shall be deemed compliance with the following federally applicable requirements in effect on the date of permit issuance:

ARIZONA ADMINISTRATIVE CODE (A.A.C.) TITLE 18, Chapter 2

ARTICLE 3 PERMITS AND PERMIT REVISIONS

R18-2-302	40 CFR 70 – State Operating Permit Program
R18-2-304 -332	Permits and Permit Revisions

ARTICLE 7 EXISTING STATIONARY SOURCE PERFORMANCE STANDARDS

R18-2-702.B	General Provisions
R18-2-719	Performance for Existing Stationary Rotating Machinery
R18-2-727	Standards of Performance for Spray Painting Operations
SIP R9-2-527.C	Standards of Performance for Spray Painting Operations
R18-2-730.F	Standards of Performance for Unclassified Sources

ARTICLE 9 NEW SOURCE PERFORMANCE STANDARDS

R18-2-901	Standards of Performance for New Stationary Sources
R18-2-901.1	40 CFR 60, Subpart A - General Provisions
R18-2-901.43	40 CFR 60, Subpart GG – Stationary Gas Turbines
R18-2-901	40 CFR 60, Appendix A – Test Methods
R18-2-901	40 CFR 60, Appendix B – Performance Specifications
R18-2-901	40 CFR 60, Appendix F to Part 60 – Quality Assurance Procedures

CODE OF FEDERAL REGULATIONS

40 CFR 61, Subpart M –	National Emission Standards for Asbestos
40 CFR 60, Subpart IIII –	Standards of performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 63, Subpart ZZZZ - NESHAPs for Stationary Reciprocating Internal Combustion Engines

REQUIREMENTS SPECIFICALLY IDENTIFIED AS NOT APPLICABLE

As requested by the Permittee, specific non-applicable requirements have been identified as follows. A permit shield is granted from these requirements.

ARIZONA ADMINISTRATIVE CODE (A.A.C.) TITLE 18, Chapter 2

ARTICLE 3 ACID RAIN

R18-2-306 40 CFR 64 – Compliance Assurance Monitoring
R18-2-333 40 CFR 72 – 76 – Acid Rain Program

ARTICLE 5 GENERAL PERMITS

R18-2-501 – 530 General Permits

ARTICLE 6 EMISSIONS FROM EXISTING AND NEW NONPOINT SOURCES

R18-2-601 – 612 Emissions from Existing and Nonpoint Sources

ARTICLE 7 EXISTING STATIONARY SOURCE PERFORMANCE STANDARDS

R18-2-703 Standards of Performance for Existing Fossil-fuel Fired Steam Generators & General Fuel-burning Equipment
R18-2-724 Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment

ARTICLE 11 FEDERAL HAZARDOUS AIR POLLUTANTS

R18-2-1101 40 CFR 61 – National Emission Standards for Hazardous Air Pollutants
R18-2-1101 40 CFR 63 – National Emission Standards for HAPs for Source Categories

CODE OF FEDERAL REGULATIONS

40 CFR 68 – Chemical Accidental Prevention Provisions
40 CFR 82 – Protection of Stratospheric Ozone
40 CFR 85 – Control of Air Pollution from Mobile Sources

V. Insignificant Activities

INSIGNIFICANT ACTIVITY NO.	POTENTIAL EMISSION POINTS CLASSIFIED AS "INSIGNIFICANT ACTIVITIES" PURSUANT TO A.A.C. R18-2-101.57	JUSTIFICATION FOR CLASSIFICATION
1	Three Diesel Starter Engine Day Tanks (100-gal each)	Per R18-2-101.68.a(i) – diesel and fuel oil storage tanks with capacity of 40,000 gallons or less.
2	Any other activities that meet the definition of an “Insignificant Activity.”	Per R18-2-101.68.

VI. Valencia Power Plant Site Plan

Figure 1

Facility Location

CONTOUR INTERVAL 40 FEET IN THE UNITED STATES
NATIONAL GEODETIC VERTICAL DATUM OF 1929
CONTOUR INTERVAL 20 METERS IN MEXICO
DATUM IS MEAN SEA LEVEL


LEGEND
P1 – Hitachi MS 5001 Gas Turbine.
P2 - Hitachi MS 5001 Gas Turbine.
P3 - Hitachi MS 5001 Gas Turbine.
P4 - Hitachi MS 5001 Gas Turbine.
P8 – Diesel Fuel Storage Tank.
EGEN1 – Emergency Generator.
Valencia Power Plant (VPP) Fence
P8
P4
P2
P3
P1
EGEN1
N Grand Ave
N Mastick Way
W White Park Dr
N Smokey Ln
Bus
89
bing

Plan view map of Valencia Power Plant showing buildings, locations of turbine stacks and process area boundary

EGEN1 – Emergency Diesel Generator

VII. Draft Permit

ATTACHMENT "B": SPECIFIC CONDITIONS

I. FACILITY WIDE REQUIREMENTS

A. The Permittee shall have on site or on call a person certified in EPA Reference Method 9 unless all Method 9 observations and instantaneous visual surveys required by this permit are conducted as Alternative Method-082 (Digital Camera Operating Technique). The Permittee shall certify the camera and the associated software in accordance with ALT-082 procedures. Any Method 9 observation or instantaneous visual survey required by this permit can be conducted as ALT-082. The results of a Method 9 observation or any instantaneous visual survey conducted as ALT-082 shall be obtained within 30 minutes of completing the Method 9 observation or instantaneous visual survey.

[A.A.C. R18-2-306.A.3.c]

B. At the time the compliance certifications required by Section VII of Attachment "A" are submitted, the Permittee shall submit reports of all monitoring activities required by this Attachment performed in the same six month period as applicable to the compliance certification period.

[A.A.C. R18-2-306.A.5.a]

C. The Permittee shall keep a log of all emission related maintenance activities performed at the facility.

[A.A.C. R18-2-306.A.3.c]

D. Voluntarily Accepted Limitations

1. Emission Limitations

   a. Nitrogen Oxides (NO_x)

   Total combined emissions of NO_x from the four Gas Turbine Units (P1, P2, P3, and P4), the Emergency Diesel Generator Engine (EGEN), and the three startup engines BSP1, BSP2, and BSP3 shall not exceed 240 tons per year, calculated daily as a rolling 365-day total.

   [A.A.C R18-2-306.01, -306.02, and -331.A.3.a]
   [Material permit conditions are indicated by underline and italics]

   b. Carbon Monoxide (CO)

   Total combined emissions of CO from the four Gas Turbine Units (P1, P2, P3, and P4), the Emergency Diesel Generator Engine (EGEN), and the three startup engines BSP1, BSP2, and BSP3 shall not exceed 240 tons per year, calculated daily as a rolling 365-day total.

   [A.A.C R18-2-306.01, -306.02, and -331.A.3.a]
   [Material permit conditions are indicated by underline and italics]

2. Monitoring, Recordkeeping, and Reporting Requirements

   [A.A.C. R18-2-306.A.3, 4 & 5, -306.02(C), and -312.H.3]

   a. For the purpose of compliance demonstration with Condition I.D.1, the Permittee shall calculate NO_x and CO mass emission rates for each gas turbine unit in units of pounds per hour, pounds per day, and tons per daily rolling 365-day total using the following in conjunction with the Data Acquisition and Handling System (DAHS):

(1) 0.326 lb of NO_x per mmBtu and 0.593 lb of CO per mmBtu shall be used as emission factors in calculating NO_x and CO mass emissions for Units P1, P2 and P3;

(2) Data from Unit P4 NO_x, CO, and diluent CEMS as required in Conditions II.C.3.c and II.E.1 shall be used in conformity with applicable procedures in Method 19 of 40 CFR 60 Appendix A and 40 CFR 75 Appendix F to quantify Unit P4 NO_x and CO mass emissions; and

(3) Data from fuel flow monitoring systems as required in Condition II.C.3.a shall be used to quantify heat input to each gas turbine unit.

b. The Permittee shall keep records of daily and rolling 365-day totals of the hours of operation of Gas Turbine Units P1, P2, and P3; emergency generator EGEN; and startup engines BSP1, BSP2, and BSP3.

c. The Permittee shall calculate daily the emissions of NO_x and CO from the emergency generator EGEN and startup engines BSP1, BSP2, and BSP3 by using the hours of operation and the emission factors for each engine listed below:

EMITTING UNIT	UNIT	EMISSION FACTOR	
		NO_x	CO
Emergency Diesel Generator (EGEN)	g/Kw-hr	6.4	3.5
Startup Engines (BSP1, BSP2, and BSP3)	lb/hp-hr	0.031	0.00668

d. The Permittee shall calculate the rolling 365-day total emissions of NO_x and CO from Gas Turbine Units P1, P2, P3, P4, emergency generator EGEN, and startup engines BSP1, BSP2, and BSP3 to show compliance with Condition I.D.1 above.

e. Each calendar day during which total combined rolling 365-day total NO_x emission rate from Gas Turbine Units P1, P2, P3, P4, emergency generator EGEN, startup engines BSP1, BSP2, and BSP3 exceeds 240 tons shall constitute an exceedance of Condition I.D.1.a. Exceedances shall be reported to the Director in accordance with Condition XII.A of Attachment "A".

f. Each calendar day during which total combined rolling 365-day total CO emission rate from Gas Turbine Units P1, P2, P3, P4, emergency generator EGEN, startup engines BSP1, BSP2, and BSP3 exceeds 240 tons shall constitute an exceedance of Condition I.D.1.b. Exceedances shall be reported to the Director in accordance with Condition XII.A of Attachment "A".

g. Each individual day and 365-day rolling total NO_x and CO emission rate in the reporting period shall be included in the semiannual compliance certification required by Condition VII of Attachment "A".

h. The Permittee shall maintain the following records in accordance with Condition XIII of Attachment "A":

(1) All CEMS and fuel flow rate monitoring system performance evaluations, calibration checks and adjustments, and maintenance activities.

(2) All compliance records including calculations, reports, and supporting documentation.

II. GAS TURBINE UNITS P1, P2, P3, AND P4

A. General Provisions

The following requirements apply to the operation, maintenance, and testing of Gas Turbine Units P1, P2, P3, and P4 and associated monitoring systems in accordance with 40 CFR Part 60, Subpart A – General Provisions.

1. The Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

[40 CFR 60.7(b)]

2. The Permittee shall submit excess emissions and monitoring systems performance reports and/or summary report forms on a quarterly basis as required by 40 CFR 60.7(c) and (d). The Permittee may reduce the frequency of reporting in accordance with the provisions in 60.7(e).

[40 CFR 60.7(c), (d), and (e)]

3. The Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records, except as provided in 40 CFR 60.7(f)(1) and (2).

[40 CFR 60.7(f)]

4. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate this facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

[40 CFR 60.11(d)]

5. For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in 40 CFR Part 60, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[40 CFR 60.11(g)]

6. The Permittee shall not build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission, which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with opacity standard or with a standard, which is based on the concentration of pollutant in the gases discharged to the atmosphere.

[40 CFR 60.12]

7. The Permittee shall comply with the "General notification and reporting requirements" found in 40 CFR 60.19.

[40 CFR 60.19]

B. Operational Limitations

1. Fuel Limitation

[A.A.C. R18-2-306.A.2]

a. Type of Fuel

The Permittee shall not cause or allow the combustion of any fuel in Gas Turbine Units P1, P2, P3, and P4 other than:

(1) Natural gas;

(2) Distillate fuel oil; or

(3) Mixture of natural gas and distillate fuel oil.

b. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.4]

(1) On a daily basis, the Permittee shall keep records of the type of fuel burned in Gas Turbine Units P1, P2, P3, and P4.

(2) The Permittee shall keep a record of any change in fuel type including:

(a) Type of fuel change; and

(b) Date and time of the fuel change.

C. Nitrogen Oxides (NO_x)

1. Emission Limitations/Standards

[40 CFR 60.332(a)(1) and (b)]

The Permittee shall not cause to be discharged into the atmosphere from each Gas Turbine (Units P1, P2, P3, and P4) any gases which contain nitrogen oxides (NO_x) in excess of:

$$STD = 0.0075 * \frac{(14.4)}{Y} + F$$

Where:

STD = allowable ISO corrected NO_x emission concentration (percent by volume at 15 percent oxygen and on a dry basis),

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour, and

F = NO_x emission allowance for fuel-bound nitrogen = 0

STD = 75 ppmv at 15 percent oxygen

2. Air Pollution Control Equipment

a. *At all times when Gas Turbine Units P1, P2, P3, and P4 are in operation, including periods of startup, shutdown, and malfunction, the Permittee shall to the extent practicable, maintain and operate the water injection system(s) in a manner consistent with good air pollution control practice for minimizing NO_x emissions.*

[A.A.C. R18-2-2-331.A.3.e and 40 CFR 60.11(d)]
[Material permit conditions are indicated by underline and italics]

b. *The Permittee shall operate and maintain an audible alarm system on each gas turbine unit to alert the turbine operator when the water injection system becomes inoperable.*

[A.A.C. R18-2-306.A.3 and -331.A.3.e]
[Material permit conditions are indicated by underline and italics]

3. Monitoring, Recordkeeping, and Reporting Requirements

a. Fuel Flow Rate for Units P1, P2, P3, and P4

The Permittee shall calibrate, maintain, and operate *fuel flow rate monitoring systems installed on Units P1, P2, P3 and P4 for determining the natural gas and/or distillate fuel oil input rate to each gas turbine unit for each operating hour. Each fuel flow rate monitoring system shall be calibrated and quality-assured in accordance with Conditions II.F.6 and II.F.7.*

[A.A.C. R18-2-306.A.3, -306.02.C, and -331.A.3.c]
[Material permit conditions are indicated by underline and italics]

b. Water to Fuel Ratio for Units P1, P2 and P3

The Permittee shall install, *calibrate*, maintain and operate *a continuous monitoring system (CMS) for Gas Turbine Units P1, P2, and P3 to monitor and record the fuel consumption and the ratio of water to fuel being fired in each of the turbines.*

[40 CFR 60.334(a), A.A.C. R18-2-306.A.3, -306.02.C, and -331.A.3.c]
[Material permit conditions are indicated by underline and italics]

(1) Acceptable values and ranges of the water to fuel ratio shall be established based on the ratio monitored during performance test as required in Condition II.C.4. To define the acceptable parametric ranges more precisely, the Permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations and other relevant information.

[40 CFR 60.334(g)]

(2) A parameter monitoring plan shall be developed and kept on-site which explains the procedures used to document proper operation of the water injection system required under Condition II.C.2.a. The plan shall include the parameter(s) monitored and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturer's recommendations and other relevant information shall be included in the monitoring plan.

[40 CFR 60.334(g)]

c. NO_x CEMS for Unit P4

The Permittee shall certify, maintain, operate, and quality-assure *Continuous Emission Monitoring Systems (CEMS) consisting of NO_x and O_2 (or CO_2) monitors for measuring NO_x emissions from Gas Turbine Unit P4. The NO_x and diluent CEMS shall be certified, maintained, and operated as follows:*

[40 CFR 60.334(b), A.A.C. R18-2-306.A.3, -306.02.C, and -331.A.3.c]
[Material permit conditions are indicated by underline and italics]

(1) Each CEMS must be certified according to Performance Specification 2 and 3 (for diluent) of 40 CFR Part 60, Appendix B, except the 7-day calibration drift is based on unit operating days, not calendar days.

[40 CFR 60.334(b)(1)]

(2) Except for the system breakdowns, repairs, calibration checks, and zero and span adjustments, the NO_x and diluent CEMS shall be in continuous operation during each unit operating hour.

[40 CFR 60.13(e)]

(3) During each full unit operating hour, each monitor must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour, to

validate the hour. For partial unit operating hours, at least one valid data point must be obtained for each quadrant of the hour in which the unit operates. For unit operating hours in which required quality assurance and maintenance activities are performed on the CEMS, a minimum of two valid data points (one in each of two quadrants) are required to validate the hour.

[40 CFR 60.334(b)(2)]

(4) For the purpose of identifying excess emissions, CEMS data must be reduced to hourly averages as specified in 40 CFR 60.13(h).

[40 CFR 60.334(b)(3)]

(5) For each unit operating hour in which a valid hourly average is obtained for both NO_x and diluent, the data acquisition and handling system must calculate and record the hourly NO_x emissions in the units of the applicable NO_x emission standard under Condition II.C.1 of this Attachment. For any hour in which the hourly average O_2 concentration exceeds 19.0 percent O_2, a diluent cap value of 19.0 percent O_2 may be used in the emission calculations.

[40 CFR 60.334(b)(3)(i)]

(6) A worst case ISO correction factor may be calculated and applied using historical ambient data in accordance with the procedures in 40 CFR 60.334(b)(3)(ii).

[40 CFR 60.334(b)(3)(ii)]

d. Excess Emissions and Monitor Downtime

The Permittee shall submit reports of excess emissions and monitor downtime in accordance with 40 CFR 60.7(c). The reports shall be postmarked by the 30th day following the end of each calendar quarter. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction. Periods of excess emissions and monitor downtime that shall be reported are defined as follows:

(1) For water to fuel ratio monitored at Units P1, P2 and P3

[40 CFR 60.334(j)(1)(i)]

(a) An excess emission shall be any unit operating hour for which the average water to fuel ratio, as measured by the continuous monitoring system required by Condition II.C.3.b, falls below the acceptable water to fuel ratio needed to demonstrate compliance with Condition II.C.1.a. Any unit operating hour in which no water is injected into the turbine shall also be considered an excess emission.

(b) A period of monitor downtime shall be any unit operating hour in which water is injected into the turbine, but the essential parametric data needed to determine the water to fuel ratio are unavailable or invalid.

(c) Each report shall include the average water to fuel ratio, average fuel consumption, ambient conditions (temperature, pressure, and humidity), and gas turbine load during each excess emission. Report of the ambient conditions is not required if the worst case ISO correction factor as specified in §60.334(b)(3)(ii) is used.

(2) For NO_x and diluent CEMS at Unit P4

[40 CFR 60.334(j)(1)(iii)]

(a) An hour of excess emissions shall be any unit operating hour in which the 4-hour rolling average NO_x concentration exceeds the applicable emission limit in Condition II.C.1 of this Attachment. A 4-hour rolling average NO_x concentration is the arithmetic average of the average NO_x concentration measured by the CEMS for a given hour (corrected to 15 percent O_2 and, to ISO standard conditions) and the three unit operating hour average NO_x concentrations immediately preceding that unit operating hour.

(b) A period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour, for either NO_x concentration or diluent (or both).

(c) Each report shall include the ambient conditions (temperature, pressure, and humidity) at the time of the excess emission period. The Permittee is not required to report ambient conditions if opting to use the worst case ISO correction factor as specified in 40 CFR 60.334(b)(3)(ii).

[40 CFR 60.334(j)(1)(iii)]

4. Performance Testing

a. First Year

During the first year of the permit term, the Permittee shall conduct a performance test on each of Gas Turbine Units P1, P2 and P3 using test methods and procedures prescribed in 40 CFR §60.335 to demonstrate compliance with the NO_x standard in Condition II.C.1. The water to fuel ratio monitoring system required under Condition II.C.3.b shall be operated concurrently during the performance test and shall be used to determine the fuel consumption and the water to fuel ratio necessary to comply with the NO_x emission limit set forth in Condition II.C.1.

[40 CFR 60.335 and A.A.C. R18-2-306.A.3]

b. Second Year, Third Year, and Fourth Year

During the second year, third year, and fourth year of the permit term in which either Gas Turbine Units P1, P2, or P3 operates 500 hours or more, the Permittee shall conduct a performance test on Gas Turbine Units P1, P2, and P3 using test methods and procedures prescribed in 40 CFR

§60.335 to demonstrate compliance with the NO_x standard in Condition II.C.1.

[A.A.C. R18-2-306.A.3]

c. Fifth Year

During the fifth year of the permit term, the Permittee shall conduct a performance test on each of Gas Turbine Units P1, P2, and P3 using test methods and procedures prescribed in 40 CFR §60.335 to demonstrate compliance with the NO_x standard in Condition II.C.1.

[A.A.C. R18-2-306.A.3]

The first year, second year, third year, fourth year, and fifth year of the permit term are defined below.

First Year	First twelve months of the permit term	Months 1-12
Second Year	Second twelve months of the permit term	Months 13-24
Third Year	Third twelve months of the permit term	Months 25-36
Fourth Year	Fourth twelve months of the permit term	Months 37-48
Fifth Year	Fifth twelve months of the permit term	Months 49-60

5. Permit Shield

Compliance with Condition II.C shall be deemed compliance with the following requirements as of the date of issuance of this permit: 40 CFR 60.332(a)(1) & (b), 334(a), (b)(1), (b)(2), (b)(3), (b)(3)(i) & (ii), and (j)(1)(iii).

[A.A.C.R18-2-325]

D. Sulfur Dioxide (SO_2)

1. Emission Limitations/Standards

a. *The Permittee shall not burn in Gas Turbine Units P1, P2, P3, and P4 and fuel that contains sulfur in excess of 0.2 percent by weight.*

[A.A.C. R18-2-306.01 & -331.A.3.a, and 40 CFR 60.333(b)]
[Material permit conditions are indicated by underline and italics]

b. *Total combined emissions of SO_2 from Gas Turbine Units P1, P2, P3, and P4 shall not exceed 200 tons per year, calculated monthly as rolling 12-month total.*

[A.A.C. R18-2-306.01, -306.02, and -331.A.3.a]
[Material permit conditions are indicated by underline and italics]

2. Monitoring, Recordkeeping, and Reporting Requirements

a. Fuel Sulfur Content

(1) Natural Gas

The Permittee shall maintain a vendor-provided copy of that part of the Federal Energy Regulatory Commission (FERC)-approved Tariff agreement that contains the sulfur content and the lower heating value of the pipeline quality natural gas which demonstrates that the fuel meets the definition of "natural gas" contained in 40 CFR 60.331(u).

[40 CFR 60.334(h)(3)]

(2) Distillate Fuel Oil

(a) The Permittee shall keep on record a copy of the distillate fuel oil purchase specification sheet. This specification sheet shall include the sulfur content (sulfur weight percentage) and the method used to determine the sulfur content of the distillate fuel oil.

[A.A.C. R18-2-306.A.4]

(b) The Permittee shall monitor the total sulfur content of the distillate fuel oil being fired in each gas turbine unit. The sulfur content of the fuel must be determined using total sulfur methods described in 40 CFR 60.335(b)(10)(i).

[40 CFR 60.334(h)(1)]

(c) The Permittee shall use one of the total sulfur sampling options and the associated sampling frequency described in sections 2.2.3, 2.2.4.1, 2.2.4.2, and 2.2.4.3 of 40 CFR 75 Appendix D (i.e., flow proportional sampling, daily sampling, sampling from the unit's storage tank after each addition of fuel to the tank, or sampling each delivery prior to combining it with distillate fuel oil already in the intended storage tank).

[40 CFR 60.334(i)(1)]

(d) The fuel analyses required by Condition II.D.2.a.(2)(c) may be performed by the Permittee, a service contractor retained by the Permittee, the fuel vendor, or any other qualified agency. Distillate fuel oil vendor specifications maintained in accordance with Condition II.D.2.a.(2)(a) may be used to meet the requirements of Conditions II.D.2.a.(2)(b) and (c), if the sampling and analysis procedures contained in Conditions II.D.2.a.(2)(b) and (c) are adhered to.

[40 CFR 60.335(b)(11)]

(e) For the purpose of demonstrating compliance with Condition II.D.1.b, the Permittee shall submit reports of excess emissions and monitor downtime in accordance

with 40 CFR 60.7(c). All reports required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each calendar quarter. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction. Periods of excess emissions and monitor downtime that shall be reported are defined as follows:

(i) For oil samples obtained using daily sampling, flow proportional sampling, or sampling from the unit's storage tank, an excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in any gas turbine exceeds the limits in Condition II.D.1.a and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit.

(ii) If the option to sample each delivery of distillate oil has been selected, the Permittee shall immediately switch to one of the other oil sampling options if the sulfur content of a delivery exceeds the limit in Condition II.D.1.a. The Permittee shall continue to use one of the other sampling options until all of the oil from the delivery has been combusted, and shall evaluate excess emissions according to Condition II.D.2.a.(2)(e)(i). When all of the fuel from the delivery has been burned, the Permittee may resume using the as-delivered sampling option.

(iii) A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime shall include only unit operating hours, and ends on the date and hour of the next valid sample.

[40 CFR 60.334(j)(2)]

b. Annual SO_2 Emission Limit

For the purpose of compliance demonstration with Condition II.D.1.b, the Permittee shall perform the following calculations, recordkeeping, and reporting:

(1) The Permittee shall utilize fuel sulfur analysis or specification data required by Condition II.D.2.a, actual fuel usage records, and emission factors approved by the Department to calculate and record each individual month and the 12-month rolling total

combined SO_2 emission rate from Gas Turbine Units P1, P2, P3, and P4.

(2) The calculations required by Condition II.D.2.b.(1) shall be performed and results documented by the 15th day of each calendar month for the previous 12-month period.

(3) Each calendar month during which total combined rolling 12-month total SO_2 emission rate from Gas Turbine Units P1, P2, P3, and P4 exceed 200 tons shall constitute an exceedance of Condition II.D.1.b. Exceedances shall be reported to the Director in accordance with Condition XII.A of Attachment "A".

(4) Each individual month and twelve month rolling total SO_2 emission rate in the reporting period shall be included in the semiannual compliance certification required by Condition VII of Attachment "A".

(5) All compliance records, calculations, and supporting documentation shall be maintained in accordance with Condition XIII of Attachment "A".

[A.A.C. R18-2-306.A.3, 4 & 5, and -306.02(C)]

3. Permit Shield

Compliance with Condition II.D shall be deemed compliance with 40 CFR 60.333 (a) & (b), 334(h)(1) & (3), (i)(1), (j)(2), and 60.335(b)(11).

[A.A.C.R18-2-325]

E. Carbon Monoxide

1. Monitoring, Recordkeeping, and Reporting Requirements

The Permittee shall certify, maintain, operate, and *quality-assure Continuous Emission Monitoring Systems (CEMS) consisting of CO and O_2 (or CO_2) monitors for measuring CO emissions from Gas Turbine Unit P4.*

[A.A.C. R18-2-306.A.3, -306.02.C, and -331.A.3.c]
[Material permit conditions are indicated by underline and italics]

2. Performance Testing

During any year of the permit term in which either Gas Turbine Units P1, P2, or P3 operates 500 hours or more, the Permittee shall conduct a performance test on Gas Turbine Units P1, P2 and P3 using test methods and procedures prescribed in EPA Reference Method 10.

[A.A.C. R18-2-312]

F. Additional Monitoring, Recordkeeping, and Reporting Requirements for NO_x and CO Mass Emissions

[A.A.C. R18-2-306.A.3, 4 & 5, -306.02(C), and -312.H.3]

1. The Permittee shall comply with the following requirements in 40 CFR 60.13 for Unit P4 NOx, CO and diluent CEMS:

a. 40 CFR 60.13(d): Zero, span, and calibration drift check requirements;

b. 40 CFR 60.13(e): Minimum frequency of operation requirements;

c. 40 CFR 60.13(f): Installation guidelines;

d. 40 CFR 60.13(h): Data reduction; and

e. 40 CFR 60.13(i): Provisions for the approval of alternate monitoring procedures.

2. Unit P4 NOx, CO, and diluent CEMS shall meet the following Performance Specifications in 40 CFR 60 Appendix B:

a. NO_x: Performance Specification 2– Specifications and Test Procedures for SO_2 and NO_x Continuous Emission Monitoring Systems in Stationary Sources

b. O_2 or CO_2: Performance Specification 3– Specifications and Test Procedures for O_2 and CO_2 Continuous Emission Monitoring Systems in Stationary Sources

c. CO: Performance Specification 4–Specifications and Test Procedures for Carbon Monoxide Continuous Emission Monitoring Systems in Stationary Sources

3. Unit P4 NOx, CO, and diluent CEMS shall meet the Quality Assurance Requirements in 40 CFR 60 Appendix F.

4. A period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour, for either NO_x, CO diluent concentration, or fuel flow rate.

5. During CEMS or fuel flow rate monitoring system downtime, the Permittee shall implement the missing data procedures and calculations contained in the most current monitoring system QA/QC plan.

6. Quality Assurance Requirements for Natural Gas Fuel Flowmeters:

a. Each transmitter or transducer shall be calibrated by equipment that has a current certificate of traceability to NIST standards at least once every four calendar quarters in which a unit operated on natural gas for 168 hours or more during each quarter but not less than once every three years. The Permittee shall check the calibration of each transmitter or transducer by comparing its readings to that of the NIST traceable equipment at least once at the following levels: the zero-level, and at least two other upscale levels (e.g., "mid" and "high"), such that the full range of transmitter or transducer readings corresponding to normal unit operation is represented.

b. The Permittee shall calculate the accuracy of each transmitter or transducer at each level tested, using the following equation:

$$ACC = \frac{|R - T|}{FS} * 100$$

Where:

ACC = Accuracy of the transmitter or transducer as a percentage of full-scale.

R = Reading of the NIST traceable reference value (in milliamperes, inches of water, psi, or degrees).

T = Reading of the transmitter or transducer being tested (in milliamperes, inches of water, psi, or degrees, consistent with the units of measure of the NIST traceable reference value).

FS = Full-scale range of the transmitter or transducer being tested (in milliamperes, inches of water, psi, or degrees, consistent with the units of measure of the NIST traceable reference value).

c. If each transmitter or transducer meets an accuracy of ±1.0 percent of its full-scale range at each level tested, the fuel flowmeter accuracy of 2.0 percent is considered to be met at all levels. If, however, one or more of the transmitters or transducers does not meet an accuracy of ±1.0 percent of full-scale at a particular level, then the Permittee may demonstrate that the fuel flowmeter meets the total accuracy specification of 2.0 percent at that level by using one of the following alternative methods. If, at a particular level, the sum of the individual accuracies of the three transducers is less than or equal to 4.0 percent, the fuel flowmeter accuracy specification of 2.0 percent is considered to be met for that level. Or, if at a particular level, the total fuel flowmeter accuracy is 2.0 percent or less, when calculated in accordance with Part 1 of American Gas Association Report No. 3, General Equations and Uncertainty Guidelines, the flowmeter accuracy requirement is considered to be met for that level.

d. If during a transmitter or transducer accuracy test the flowmeter accuracy specification of 2.0 percent is not met at any of the levels tested, the Permittee shall repair or replace the transmitter(s) or transducer(s) as necessary until the flowmeter accuracy specification has been achieved at all levels. (Note that only transmitters or transducers which are repaired or replaced need to be re-tested; however, the re-testing is required at all three measurement levels to ensure that the flowmeter accuracy specification is met at each level).

e. For orifice, nozzles, and venturi type flowmeters, the Permittee shall perform a primary element inspection for damage and corrosion at least once every 12 calendar quarters in which a unit operated on natural gas for 168 hours or more during each quarter but not less than once during the term of this permit. If damage and/or corrosion are found, the Permittee shall replace the flowmeter or restore the damaged or corroded flowmeter to "as new" condition.

f. The Permittee shall log in ink, or in an electronic format the date that the

calibration and inspection was conducted, the results of the calibration or inspection, and corrective action taken if needed.

7. Quality Assurance Requirements for Distillate Fuel Oil Flowmeters

For orifices, nozzles, venturi, vortex, turbine type flowmeters, and transmitters or transducers, the Permittee shall follow the quality assurance procedures outlined in Condition II.F.6, except that the frequency of such procedures shall be based on operation of the unit(s) on distillate oil.

III. INTERNAL COMBUSTION ENGINES (ICEs)

A. Applicability

This Section applies to the internal combustion engines identified in Equipment List, Attachment "C".

B. Fuel Limitations

[A.A.C. R18-2-306.01.A and -331.A.3.a]
[Material permit conditions are indicated by underline and italics]

The Permittee shall only fire diesel fuel in the ICEs.

C. Existing Source Requirements

This Section applies to the internal combustion engines marked as 'No' in New Source Performance Standards (NSPS) Applicable column of Equipment List, Attachment "C".

1. Particulate Matter and Opacity

a. Emissions Limitations and Standards

(1) The Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel, from any stationary rotating machinery into the atmosphere in excess of the amounts calculated by the following equation:

$E = 1.02\ Q^{0.769}$

Where

E = the maximum allowable particulate emission rate in pounds-mass per hour.

Q = the heat input in million Btu per hour.

[A.A.C. R18-2-719.C.1]

(2) For purposes of this Section, the heat input shall be the aggregate heat content of all fuels whose products of combustion pass through a stack or other outlet. The total heat input of all operating fuel-burning units on a plant or premises shall be used for determining the maximum allowable amount of particulate matter which may be emitted.

[A.A.C. R18-2-719.B]

(3) Opacity

[A.A.C. R18-2-719.E]

(a) The Permittee shall not cause, allow or permit to be emitted into the atmosphere from any stationary rotating machinery, smoke for any period greater than 10 consecutive seconds which exceeds 40 percent opacity.

(b) Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.

b. Monitoring, Reporting, and Recordkeeping

[A.A.C. R18-2-306.A.3.c]

The Permittee shall keep records of fuel supplier certifications. The certification shall contain information regarding the name of fuel supplier and heating value of the fuel. These records shall be made available to ADEQ upon request.

[A.A.C. R18-2-719.I]

c. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-719.B, C.1, E, and I.

[A.A.C. R18-2-325]

2. Sulfur Dioxide

a. Emission Limitations and Standards

(1) While firing with diesel fuel, the Permittee shall not emit or cause to emit more than 1.0 pound of sulfur dioxide per million Btu.

[A.A.C. R18-2-719.F]

(2) The Permittee shall only burn fuel containing less than 0.9 percent by weight of sulfur.

[A.A.C. R18-2-719.H]

b. Monitoring, Recordkeeping, and Reporting

(1) The Permittee shall keep daily records of the sulfur content and lower heating value of the fuel being fired in the ICEs. The Permittee shall keep records of fuel supplier certifications to demonstrate compliance with the sulfur content limit specified in Condition III.C.2.a. The certification shall contain the sulfur content of the fuel and the method used to determine the sulfur content of the fuel. These records shall be made available to ADEQ upon request.

[A.A.C. R18-2-306.A.3.c and -719.I]

(2) The Permittee shall report to the Director any daily period during which the sulfur content of the fuel being fired in the machine exceeds 0.8 percent.

[A.A.C. R18-2-719.J]

c. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-719.F, H, I, and J.

[A.A.C. R18-2-325]

D. New Source Performance Standard (NSPS) Requirements

1. Applicability

a. This Section applies to the internal combustion engines marked "Yes" for NSPS in Equipment List, Attachment "C".

[40 CFR 60.4200(a)(2)]

b. Emergency Compression Ignition Internal Combustion Engine Definition

[40 CFR 60.4219]

Emergency generators shall be limited to emergency situations and required testing and maintenance only such as to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or used to pump water in the case of fire or flood, etc. The engine shall not be used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity.

2. Operating Requirements

a. *Operation of the emergency generator for any operation other than emergency operation, maintenance, and testing is prohibited.*

[40 CFR 60.4211(e); R18-2-331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

b. *The Permittee shall operate the non-resettable hour meter on the emergency generator.*

[40 CFR 60.4209(a), R18-2-331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

c. The Permittee shall operate and maintain the engine over its entire life according to the manufacturer's written instructions or procedures developed by the Permittee that are approved by the engine manufacturer. A copy of the instructions or approved procedures shall be kept onsite and made available to ADEQ upon request.

[40 CFR 60.4206, 4211(a), and A.A.C. R18-2-306.A.3]

d. The Permittee shall only change those engine settings that are permitted by the manufacturer.

[40 CFR 60.4211(a)]

e. The Permittee shall meet the requirements of 40 CFR Parts 89, 94, and/or 1068, as they apply.

[40 CFR 60.4211(a)]

f. The Permittee may operate the emergency generator for the purpose of maintenance checks and readiness testing, provided that the tests are

recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine.

[40 CFR 60.4211(e)]

g. Maintenance checks and readiness testing is limited to 100 hours per year. The Permittee may petition the Administrator and the Director for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engine beyond 100 hours per year.

[40 CFR 60.4211(e)]

3. Fuel Requirements

The Permittee shall use fuel that meets the following requirements of 40 CFR 80.510(b).

[40 CFR 60.4207(b)]

a. Sulfur Content: 15 ppm maximum; and

b. A minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

4. Emission Limitations/Standards

[40 CFR 60.4204(b) and 60.4205 (b)]
[40 CFR 89.112; Table 1]

a. Non-methane hydrocarbons (NMHC) and Nitrogen Oxides (NO_x)

The Permittee shall limit the combined emissions of NMHC and NO_x from the emergency generator EGEN to 6.4 g/Kw-hr.

b. Carbon Monoxide (CO)

The Permittee shall limit the emissions of CO from the emergency generator EGEN to 3.5 g/Kw-hr.

c. Particulate Matter (PM)

The Permittee shall limit the emissions of PM from the emergency generator EGEN to 0.2 g/Kw-hr.

5. Monitoring and Record Keeping Requirements

a. The Permittee shall maintain a copy of engine certification(s) or other documentation demonstrating that the engine complies with the applicable standards in this Permit, and shall make the documentation available to ADEQ upon request.

[40 CFR 60.4211(a)]

b. The Permittee shall keep records of fuel supplier specifications. The specifications shall contain information regarding the name of fuel

supplier, sulfur content, and cetane index or aromatic content in the fuel. These records shall be made available to ADEQ upon request.

[40 CFR 60.4211(a)]

6. Permit Shield

Compliance with the conditions in this Section shall be deemed in compliance with 40 CFR 60.4200 (a)(2), 4204(b), 4205(b), 4207(b), 4209(a), 4211 (a) & (e), and 4219.

[A.A.C. R-18-2-325]

E. National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements

1. Applicability

This Section applies to black start engines installed for the sole purpose of startup of combustion turbines and marked "Yes" in the NESHAP column of Equipment List, Attachment "C".

[40 CFR 63.6590(a)(1)(iii) and 6675]

2. General Operating Requirements

a. The Permittee must be in compliance with the applicable emission/operating limitations at all times.

[40 CFR 63.6605(a)]

b. At all times the Permittee shall operate and maintain the internal combustion engine, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the Permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

[40 CFR 63.6605(b)]

c. The Permittee shall minimize the internal combustion engine's time at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.

[40 CFR 63.6625(h)]

d. Except during periods of startup, the Permittee shall meet the following requirements for each black start engine:

(1) Change oil and filter every 500 hours of operation or annually, whichever comes first;

(2) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; and

(3) Inspect all hoses and belts every 500 hours of operation or

annually, whichever comes first, and replace as necessary.
[40 CFR 63.6603(a); Table 2d of Subpart ZZZZ; 63.6625(i)]

e. The Permittee may opt to utilize an oil analysis program in order to extend the oil change requirement specified in Condition III.E.2.d. The oil analysis shall be performed at the same frequency specified in Condition III.E.2.d. The analysis program shall at a minimum analyze the following three parameters:

(1) Total base number;

(2) Viscosity; and

(3) Percent water content.

The condemning limits for these parameters are as follows:

(1) Total base number is less than 30 percent of the total base number when oil is new;

(2) Viscosity of the oil has changed by more than 20 percent from the viscosity of oil when new; and

(3) Percent water content by volume is greater than 0.5.
[40 CFR 63.6625(i)]

f. The Permittee shall operate and maintain each black start engine according to manufacturer's emission–related written instructions or develop its own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.
[40 CFR 63.6625(e); Table 6, Item 9]

3. Reporting, Recordkeeping, and Notification requirements

a. The Permittee shall keep records in a form suitable and readily available for expeditious review according to 40 CFR 63.10(b)(1).
[40 CFR 63.6660(a)]

b. The Permittee shall keep each record for 5 years following the date of each occurrence, maintenance, corrective action, report, or record.
[40 CFR 63.6660(b)]

c. The Permittee shall keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, maintenance, corrective action, report, or record.
[40 CFR 63.6660(c)]

4. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 6590(a)(1)(iii); 6595(a)(1); 6603(a), 6605(a) & (b); 6625 (h), (i), & (e), 6660 (a), (b), & (c), and 6675.
[A.A.C. R-18-2-325]

IV. DIESEL STORAGE TANKS

A. Applicability

This Section applies to the diesel storage tanks listed in Equipment List, Attachment "C".

B. Gaseous Emissions

1. The Permittee shall not emit gaseous or odorous materials from the equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.

[A.A.C. R18-2-730.D]

2. Materials including solvents or other volatile compounds shall be processed, stored, used, and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage, or discharge, the installation and use of such control methods, devices, or equipment shall be mandatory.

[A.A.C. R18-2-730.F]

3. Where a stack, vent, or other outlet is at such a level that fumes, gas mist, odor, smoke, vapor or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet by the owner or operator thereof to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution ton adjoining property.

[A.A.C. R18-2-730.G]

4. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-730.D, F, and G.

[A.A.C. R18-2-325]

V. FUGITIVE DUST REQUIREMENTS

A. Applicability

This Section applies to any source of fugitive dust in the facility.

B. Particulate Matter and Opacity

Open Areas, Roadways & Streets, Storage Piles, and Material Handling

1. Emission Limitations/Standards

a. Opacity of emissions from any fugitive dust non-point source shall not be greater than 40% measured in accordance with the Arizona Testing Manual, Reference Method 9.

[A.A.C. R18-2-614]

b. The Permittee shall not cause, allow or permit visible emissions from any

fugitive dust point source, in excess of 20% opacity.

[A.A.C. R18-2-702.B]

c. The Permittee shall employ the following reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne:

(1) Keep dust and other types of air contaminants to a minimum in an open area where construction operations, repair operations, demolition activities, clearing operations, leveling operations, or any earth moving or excavating activities are taking place, by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means;

[A.A.C. R18-2-604.A]

(2) Keep dust to a minimum from driveways, parking areas, and vacant lots where motor vehicular activity occurs by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means;

[A.A.C. R18-2-604.B]

(3) Keep dust and other particulates to a minimum by employing dust suppressants, temporary paving, detouring, wetting down or by other reasonable means when a roadway is repaired, constructed, or reconstructed;

[A.A.C. R18-2-605.A]

(4) Take reasonable precautions, such as wetting, applying dust suppressants, or covering the load when transporting material likely to give rise to airborne dust;

[A.A.C. R18-2-605.B]

(5) Take reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods when crushing, handling, or conveying material likely to give rise to airborne dust;

[A.A.C. R18-2-606]

(6) Take reasonable precautions such as chemical stabilization, wetting, or covering when organic or inorganic dust producing material is being stacked, piled, or otherwise stored;

[A.A.C. R18-2-607.A]

(7) Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material, or with the use of spray bars and wetting agents;

[A.A.C. R18-2-607.B]

(8) Any other method as proposed by the Permittee and approved by the Director.

[A.A.C. R18-2-306.A.3.c]

2. Monitoring and Recordkeeping Requirements

a. The Permittee shall maintain records of the dates on which any of the activities listed in Conditions V.B.1.c.(1) through V.B.1.c.(8) above were performed and the control measures that were adopted.

[A.A.C. R18-2-306.A.3.c]

b. Opacity Monitoring Requirements

(1) A certified Method 9 observer shall conduct a quarterly visual survey of visible emissions from the fugitive dust sources. The Permittee shall keep a record of the name of the observer, the date and location on which the observation was made, and the results of the observation.

(2) If the observer sees a visible emission from a fugitive dust source that on an instantaneous basis appears to exceed applicable opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the visible emission.

(a) If the six-minute opacity of the visible emission is less than or equal to applicable opacity standard, the observer shall make a record of the following:

(i) Location, date, and time of the observation; and

(ii) The results of the Method 9 observation.

(b) If the six-minute opacity of the visible emission exceeds applicable opacity standard, then the Permittee shall do the following:

(i) Adjust or repair the controls or equipment to reduce opacity to below the applicable standard; and

(ii) Report it as an excess emission under Section XII.A of Attachment "A".

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-604.A, A.A.C. R18-2-604.B, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-608 and A.A.C. R18-2-612.

VI. MOBILE SOURCE REQUIREMENTS

A. Applicability

The requirements of this Section are applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used

in normal farm operations. Mobile sources shall not include portable sources as defined in A.A.C. R18-2-101.90.

[A.A.C. R18-2-801.A]

B. Particulate Matter and Opacity

1. Emission Limitations/Standards

a. Off-Road Machinery

The Permittee shall not cause, allow, or permit to be emitted into the atmosphere from any off-road machinery, smoke for any period greater than ten consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes.

[A.A.C. R18-2-802.A and -802.B]

b. Roadway and Site Cleaning Machinery

(1) The Permittee shall not cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes.

[A.A.C. R18-2-804.A]

(2) The Permittee shall take reasonable precautions, such as the use of dust suppressants, before the cleaning of a site, roadway, or alley. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

[A.A.C. R18-2-804.B]

2. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-801, A.A.C. R18-2-802.A, A.A.C. R18-2-804.A and A.A.C. R18-2-804.B.

[A.A.C. R18-2-325]

VII. OTHER PERIODIC ACTIVITIES

A. Abrasive Blasting

1. Particulate Matter and Opacity

a. Emission Limitations/Standards

The Permittee shall not cause or allow sandblasting or other abrasive blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Good modern practices include:

(1) wet blasting;

(2) effective enclosures with necessary dust collecting equipment; or

(3) any other method approved by the Director.

[A.A.C. R18-2-726]

b. Opacity

The Permittee shall not cause, allow or permit visible emissions from sandblasting or other abrasive blasting operations in excess of 20% opacity, as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

2. Monitoring and Recordkeeping Requirement

Each time an abrasive blasting project is conducted, the Permittee shall make a record of the following:

a. The date the project was conducted;

b. The duration of the project; and

c. Type of control measures employed.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-726 and A.A.C. R18-2-702.B.

[A.A.C.R18-2-325]

B. Use of Paints

1. Volatile Organic Compounds

a. Emission Limitations/Standards

While performing spray painting operations, the Permittee shall comply with the following requirements:

(1) The Permittee shall not conduct or cause to be conducted any spray painting operation without minimizing organic solvent emissions. Such operations, other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray.

[A.A.C.R18-2-727.A]

(2) The Permittee or their designated contractor shall not either:

(a) Employ, apply, evaporate, or dry any architectural coating containing photochemically reactive solvents for industrial or commercial purposes; or

(b) Thin or dilute any architectural coating with a photochemically reactive solvent.

[A.A.C.R18-2-727.B]

(3) For the purposes of Condition VII.B.1.a.(2), a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified in Conditions VII.B.1.a.(3)(a) through VII.B.1.a.(3)(c) below, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent:

(a) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation-hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones: 5 percent.

(b) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 percent.

(c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

[A.A.C.R18-2-727.C]

(4) Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups of organic compounds described in Conditions VII.B.1.a.(3)(a) through VII.B.1.a.(3)(c) above, it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents.

[A.A.C.R18-2-727.D]

b. Monitoring and Recordkeeping Requirements

(1) Each time a spray painting project is conducted, the Permittee shall make a record of the following:

(a) The date the project was conducted;

(b) The duration of the project;

(c) Type of control measures employed;

(d) Material Safety Data Sheets for all paints and solvents used in the project; and

(e) The amount of paint consumed during the project.

(2) Architectural coating and spot painting projects shall be exempt from the recordkeeping requirements of Condition VII.B.1.b(1) above.

[A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C.R18-2-727.

[A.A.C.R18-2-325]

2. Opacity

a. Emission Limitation/Standard

The Permittee shall not cause, allow or permit visible emissions from painting operations in excess of 20% opacity, as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

b. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C.R18-2-702.B.

[A.A.C. R18-2-325]

C. Demolition/Renovation - Hazardous Air Pollutants

1. Emission Limitation/Standard

The Permittee shall comply with all of the requirements of 40 CFR 61 Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos).

[A.A.C. R18-2-1101.A.8]

2. Monitoring and Recordkeeping Requirement

The Permittee shall keep all required records in a file. The required records shall include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-1101.A.8.

[A.A.C. R18-2-325]

ATTACHMENT "C": EQUIPMENT LIST

Equipment No./ S. No.	Name	Make	Model	Capacity	Year of Installation/ Manufacture	NSPS Applicable	NESHAP Applicable
P1/960621	Combustion Gas Turbine Unit 1	Hitachi	M	13.5 MW Continuous Maximum Rating	1988	Yes, Subpart GG	No
P2/960631	Combustion Gas Turbine Unit 2	Hitachi	M	13.5 MW Continuous Maximum Rating	1988	Yes, Subpart GG	No
P3/960641	Combustion Gas Turbine Unit 3	Hitachi	M	13.5 MW Continuous Maximum Rating	1988	Yes, Subpart GG	No
P4/481-574	Combustion Gas Turbine Unit 4	General Electric	LM 2500	23 MW Continuous Maximum Rating	2006/1987	Yes, Subpart GG	No
P8	Diesel Fuel Storage Tank			50,000 gallons	1997	No	No
P9	Diesel Fuel Storage Tank			50,000 gallons	1949	No	No
BSP1/ 8FF3470	P1 Black Startup CI Engine	Detroit Diesel	8083-7400	480 HP	1988	No	Yes, Existing
BSP2/ 8FF7267	P2 Black Startup CI Engine	Detroit Diesel	8083-7400	480 HP	1988	No	Yes, Existing
BSP3/ 8VF142944	P3 Black Startup CI Engine	Detroit Diesel	8083-7400	480 HP	1988	No	Yes, Existing
EGEN/ EST0088	Emergency Diesel Generator Engine	Caterpillar	C18DE96	923 HP	2010	Yes, Subpart IIII	Yes, New